

RECEIVED

ORIGINAL  
FILE

OCT 16 1991

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C. 20554

Federal Communications Commission  
Office of the Secretary

In the Matter of the Petition of:

MOTOROLA SATELLITE COMMUNICATIONS, INC.

RM No. \_\_\_\_\_

For Amendment of Parts 2 and 25 of  
the Commission's Rules to Allocate  
Spectrum for, and to Establish Other  
Policies Relating to the Licensing of  
Satellite Systems in the RDSS Bands.

**PETITION FOR RULEMAKING**

Motorola Satellite Communications, Inc. ("Motorola") hereby petitions the Commission to amend Parts 2 and 25 of the Rules to the extent set forth herein. Motorola requests that the Commission change its rules out of an abundance of caution in the event it decides that it cannot grant the rule waivers set forth in Motorola's IRIDIUM™ system application.<sup>1/</sup> This petition for rulemaking will also satisfy the Commission's current requirements for becoming eligible for a pioneer's preference.<sup>2/</sup>

<sup>1/</sup> See Application of Motorola Satellite Communications, Inc. for a Low-Earth Orbit Satellite System, File Nos. 9-DSS-P-91(87) & CSS-91-010 (Dec. 3, 1990) ("Application"). As set forth in its Comments to the four related petitions for rulemaking involving the RDSS bands, Motorola does not support the proposed rule changes suggested by those petitioners. See Comments of Motorola, RM Nos. 7771, 7773, 7805, 7806 (October 16, 1991).

<sup>2/</sup> Motorola initially filed a request for pioneer's preference in conjunction with its December 1990 application for the IRIDIUM™ system. See Application, at 7-8. Motorola subsequently renewed its pioneer's preference request on July 30, 1991. See Request for Pioneer's Preference, File Nos. 9-DSS-P-91(87) & CSS-91-010. In a related filing, Motorola supported a Petition for  
(continued...)

I.           INTRODUCTION

On December 3, 1990, Motorola proposed a revolutionary satellite system comprising a constellation of 77 low-Earth orbit ("LEO") satellites and capable of communicating with hand held and portable mobile units located virtually everywhere in the world. The constellation of satellites will be in polar orbits and occupy 7 planes. Each satellite will be interconnected by digitally switched radio communications as it traverses the globe at approximately 420 nautical miles above the earth, and will communicate with subscriber units, gateways and system control facilities on the ground. The IRIDIUM™ system will be capable of providing such services as geolocation, paging, messaging, voice, facsimile and data services to millions of users worldwide.

The IRIDIUM™ system design in many respects resembles the design of terrestrial cellular telephone systems. However, instead of having fixed cells and moving subscribers, the cells formed by the IRIDIUM™ system antenna beams will move at about 7,400 meters per second across the earth's surface and the subscribers will remain relatively fixed. This design allows for significant frequency reuse and thereby makes considerably more

---

<sup>2/</sup> (...continued)

Partial Reconsideration of the Commission's pioneer's preference rules to the extent they required that petitions for rulemaking accompany such requests. See Comments of Motorola in GEN Docket No. 90-217 (August 7, 1991). It is Motorola's view that the waiver process is a sufficient substitute for a rulemaking proceeding. However, in the event the Commission decides not to reconsider its pioneer's preference rules and eliminate the rulemaking petition requirement, this petition for rulemaking satisfies that requirement.

efficient use of the frequency spectrum than current mobile satellite systems. In addition, due to the relative closeness of the IRIDIUM™ system satellites to the surface of the earth, subscribers will not need high power and directional antennas. Rather, IRIDIUM™ subscribers will be able to communicate with the satellite constellation with portable units having a short, low profile, omni-directional antenna and a maximum power output within all applicable limits for portable phones.

The IRIDIUM™ system requires spectrum in three different frequency bands. Its user links initially will require at least 10.5 MHz of usable bandwidth in order to accommodate the projected demand in the United States and the rest of the world for RDSS and other mobile communications services. Due to sharing with other services in the RDSS uplink band (Radio Astronomy and GLONASS), it is assumed that the IRIDIUM™ system will only be able to use the spectrum above 1616.0 MHz. The system will operate bidirectionally in this band; i.e., transmit and receive in the RDSS uplink band. Expansion spectrum in the L-band will be needed after 2001 as the system usage expands. In addition, IRIDIUM™ will need approximately 200 MHz of spectrum in the K-band for intersatellite links, and a total of 100 MHz in each direction for fixed gateway links in the K-band.

II. THE PROPOSED RDSS TECHNICAL AND ALLOCATION  
RULE CHANGES ARE IN THE PUBLIC INTEREST

In order to accommodate the IRIDIUM™ system in the RDSS uplink band, Motorola's application included several requests for

waivers of the Commission's rules. Specifically, Motorola requested: (1) waiver of the domestic frequency allocation tables in order to permit primary voice and data services in the RDSS bands; (2) waiver of the technical rules to allow for bidirectional transmissions in the RDSS uplink band; and (3) waiver of the RDSS technical rules to allow for FDMA and TDMA modulations.<sup>3/</sup> Should the Commission grant Motorola's application and accompanying waiver requests, none of the Commission's RDSS rules will have to be changed at this time. As set forth in Motorola's application, there is ample authority for the Commission to grant these waiver requests without instituting a rulemaking proceeding.<sup>4/</sup>

However, in the event that the Commission rejects these waivers, Motorola hereby requests that the Commission amend its RDSS rules in order: (1) to permit the provision of primary mobile voice and data services in the RDSS bands; (2) to authorize space-to-Earth transmissions in the RDSS uplink band; and (3) to allow for the use of non-spread spectrum modulation techniques. When faced with changed circumstances, such as new and innovative technologies that were not available at the time the rules originally were adopted, the Commission is required to adjust its policies accordingly.<sup>5/</sup>

---

<sup>3/</sup> See Application at 97-104.

<sup>4/</sup> Id.

<sup>5/</sup> See, e.g., WHHT, Inc. v. FCC, 656 F.2d 807, 819 (D.C. Cir. 1981); Geller v. FCC, 610 F.2d 973, 980 n.59 (D.C. Cir. 1979).

A. THE COMMISSION SHOULD AMEND THE DOMESTIC  
TABLE OF ALLOCATIONS TO PERMIT PRIMARY  
VOICE AND DATA SERVICES IN THE RDSS UPLINK

Motorola requests that the Commission amend Sections 2.106 and 25.141(d) of its rules to permit RDSS licensees to offer primary voice and data services on other than an "ancillary" basis. This proposed amendment will significantly advance the efficient use of the frequency spectrum, enhance the safety of lives and property worldwide, foster the international competitiveness of the United States, and serve the Commission's desire to reallocate the RDSS bands internationally to co-primary RDSS and generic MSS use.

The RDSS bands currently are substantially underutilized. Although the Commission's original intent when it allocated these bands to RDSS was to license multiple RDSS systems to foster competition in the provision of radiolocation and radionavigation services,<sup>6/</sup> market demand has proved insufficient to support even one dedicated RDSS system. Instead, in the five years since the Commission's RDSS Licensing Order only one licensee, Geostar Positioning Corporation ("Geostar"), has succeeded in bringing any private radiodetermination services to the public.

The lack of interest in constructing and operating a dedicated RDSS satellite system, however, does not suggest any

---

<sup>6/</sup> See Amendment to the Commission's Rules to Allocate Spectrum for, and to Establish Other Rules and Policies Pertaining to, a Radiodetermination Satellite Service, 104 F.C.C.2d 650, 653 (1986) ("RDSS Licensing Order").

lack of demand for RDSS services in the United States. Indeed, five of the six pending applications proposing operations in the RDSS bands have identified significant demand for radiodetermination services. All of these systems would offer RDSS as well as other mobile satellite communications services. In these circumstances, the public interest would be better served by reallocating the RDSS bands to co-primary RDSS and MSS. Such an amendment to the domestic table of allocations also would be fully consistent with the United States' WARC-92 positions to elevate RDSS to primary status worldwide and to add generic MSS on a co-primary basis.<sup>7/</sup>

Moreover, the requested reallocation of the RDSS bands in order to permit non-ancillary voice and data services will advance United States competitiveness in international telecommunications generally and place the United States at the forefront of developments in low Earth orbit satellite technologies. It also would promote the Commission's policy of fostering communications technologies that enhance the safety of life and property.<sup>8/</sup>

B. THE COMMISSION SHOULD AMEND THE RDSS RULES TO ALLOW FOR DOWNLINKS IN THE RDSS UPLINK BAND

Motorola requests that the Commission amend Sections 2.106 and 25.202(a)(2) of the Rules to permit the operation of space-to-Earth transmissions in the RDSS uplink band on a primary

---

<sup>7/</sup> See WARC-92 Report, 6 F.C.C. Rcd. 3900 (1991).

<sup>8/</sup> Aeronautical Radio Inc., 5 F.C.C. Rcd. 3038 (1990).

basis. In its Application, Motorola demonstrated that such bidirectional usage will not cause harmful interference to any existing users or any proposed satellite systems which otherwise conform to the RDSS rules.<sup>9/</sup>

Bidirectional transmissions also could free up the 2483.5-2500 MHz band for other uses, and thereby conserve scarce spectrum. The IRIDIUM™ system can efficiently provide RDSS and other mobile satellite services in the RDSS uplink band without needing separate paired downlink spectrum. The Commission has traditionally advocated the efficient use of the frequency spectrum in order to bring the maximum possible level of service to the public.

Such a rule change also would be consistent with the United States position at WARC-92 to allocate the 1613.8-1626.5 MHz band to MSS (space-to-Earth) on a secondary basis.<sup>10/</sup> Motorola believes that this allocation can and should be elevated to primary status. IRIDIUM™ downlinks would not cause interference to MSS/RDSS uplinks in the band above 1613.8 MHz and should not be required to accept interference from new MSS/RDSS systems in other bands.

C. THE COMMISSION SHOULD AMEND THE RDSS RULES TO PERMIT NON-SPREAD SPECTRUM MODULATION TECHNIQUES

Motorola further requests that the Commission amend Section 25.141 of the Rules, to allow for the use of FDMA and

---

<sup>9/</sup> See Application, Appendix B.

<sup>10/</sup> See WARC-92 Report, 6 F.C.C. Rcd. at 3907.

TDMA modulation characteristics in the RDSS uplink band. The Commission required RDSS licensees to use spread spectrum modulation in order to avoid causing interference to other RDSS licensees, because it was the only technology proposed at the time which appeared to permit multiple entry.<sup>11/</sup> As demonstrated in Motorola's application,<sup>12/</sup> however, the IRIDIUM™ system can effectively share the same spectrum with other compliant geostationary RDSS systems employing CDMA modulation characteristics.<sup>13/</sup> Thus, allowing IRIDIUM™ to operate using non-spread spectrum modulation techniques would satisfy the rationale underlying the RDSS compatibility requirement, and, at the same time, enable other compliant RDSS systems to use the same spectrum.

Moreover, the Commission's CDMA/spread spectrum rules were premised on a belief that up to twelve dedicated RDSS systems might eventually be operating in the same spectrum.<sup>14/</sup> As previously indicated, the market has not developed as originally anticipated.<sup>15/</sup> Given the large investment required to construct, launch and operate a combined RDSS/MSS satellite system, and the associated risks of going forward with any satellite program, it

---

<sup>11/</sup> RDSS Licensing Order, 104 F.C.C.2d at 661.

<sup>12/</sup> See Application, Appendix B.

<sup>13/</sup> An additional benefit to permitting use of the RDSS band for TDMA and FDMA technology is that systems using such technologies utilize the spectrum more efficiently than CDMA systems.

<sup>14/</sup> RDSS Licensing Order, 104 F.C.C.2d at 663 n.44.

<sup>15/</sup> See Second Notice of Inquiry, GEN Docket No. 89-554, 5 F.C.C. Rcd. 6046, 6056 (1990).



is unlikely that more than a couple of the proposed systems will ever go into service. It, therefore, makes no sense for the Commission to continue to pursue a regulatory strategy which includes design restrictions and overall capacity limitations on proposed systems in the hope of promoting unlimited entry in the RDSS bands. The Commission must develop a regulatory regime which reflects today's technologies and the realities of the marketplace. The imposition of CDMA and spread spectrum modulation techniques no longer can be justified as being in the public interest.<sup>16/</sup>

Once again, this proposed rule change is consistent with the United States' position at WARC-92 for the RDSS bands. In its WARC-92 Report, the Commission specifically chose not to adopt a recommendation that would have required all systems in the RDSS bands to operate with compatible CDMA characteristics. Instead, the Commission recommended a footnote to the allocation tables which only generally requires compatibility between RDSS and MSS systems without endorsing any modulation technique or compatibility standard.<sup>17/</sup>

---

<sup>16/</sup> The Commission should continue to require that any future system proposing operation in the RDSS bands be compatible with licensed systems, however, such compatibility should be premised on the modulation schemes of the authorized systems, rather than on any theoretical technology.


<sup>17/</sup> See WARC-92 Report, 6 F.C.C. Rcd. at 3939 n. 733Z.


III. CONCLUSION

For the foregoing reasons, the Commission should consider adopting the rule changes proposed in this Petition.

Respectfully submitted,

MOTOROLA SATELLITE  
COMMUNICATIONS, INC.

  
Veronica Haggard  
Robert Frieden  
Motorola, Inc.  
1350 I Street, N.W., Suite 400  
Washington, D.C. 20005  
(202) 371-6900

  
Philip L. Malet  
Steptoe & Johnson  
1330 Connecticut Avenue, N.W.  
Washington, D.C. 20036  
(202) 429-6239

James G. Ennis  
Fletcher Heald & Hildreth  
1225 Connecticut Ave., N.W.  
Suite 400  
Washington, D.C. 20036  
(202) 828-5782

Its Attorneys

October 16, 1991

CERTIFICATE OF SERVICE

I, Philip L. Malet, hereby certify that the foregoing Petition for Rulemaking was served by first-class mail, postage prepaid, this 16th day of October, 1991 on the following persons:

Chairman Alfred C. Sikes  
Federal Communications Commission  
Room 814  
1919 M Street, N.W.  
Washington, D.C. 20554

Commissioner James H. Quello  
Federal Communications Commission  
Room 802  
1919 M Street, N.W.  
Washington, D.C. 20554

Commissioner Sherrie P. Marshall  
Federal Communications Commission  
Room 826  
1919 M Street, N.W.  
Washington, D.C. 20554

Commissioner Andrew C. Barrett  
Federal Communications Commission  
Room 844  
1919 M Street, N.W.  
Washington, D.C. 10554

Commissioner Ervin S. Duggan  
Federal Communications Commission  
Room 832  
1919 M Street, N.W.  
Washington, D.C. 20554

Thomas P. Stanley  
Chief Engineer  
Federal Communications Commission  
2025 M Street, N.W.  
Room 7002  
Washington, D.C. 20554

Raymond LaForge  
Federal Communications Commission  
Room 7334  
2025 M Street, N.W.  
Washington, D.C. 20554

Richard M. Firestone  
Chief, Common Carrier Bureau  
Federal Communications Commission  
Room 500  
1919 M Street, N.W.  
Washington, D.C. 20554

Wendell R. Harris  
Assistant Bureau Chief  
Common Carrier Bureau  
Federal Communications Commission  
Room 6010  
2025 M Street, N.W.  
Washington, D.C. 20554

\*Cecily C. Holiday  
Chief, Satellite Radio Branch  
Federal Communications Commission  
Room 6324  
2025 M Street, N.W.  
Washington, D.C. 20554

James R. Keegan  
Chief, Domestic Facilities Division  
Common Carrier Bureau  
Federal Communications Commission  
2025 M Street, NW, Room 6010  
Washington, DC 20554

Thomas Tycz  
Deputy Chief  
Domestic Facilities Division  
Common Carrier Bureau  
Federal Communications Commission  
Room 6010  
2025 M Street, N.W.  
Washington, D.C. 20554

\*Fern J. Jarmulnek  
Satellite Radio Branch  
Federal Communications Commission  
2025 M Street, NW, Room 6324  
Washington, DC 20554

Lon C. Levin  
Glenn S. Richards  
Gurman, Kurtis, Black & Freedman  
1400 16th Street, N.W.  
Suite 500  
Washington, D.C. 20036  
(Counsel for AMSC)

Gary M. Epstein  
James F. Rogers  
Kevin C. Boyle  
Latham & Watkins  
1001 Pennsylvania Avenue, N.W.  
Suite 1300  
Washington, D.C. 20004  
(Counsel for Hughes Aircraft)

E. William Henry  
Henry M. Rivera  
Ginsburg, Feldman and Bress  
Chartered  
1250 Connecticut Ave., N.W.  
Washington, D.C. 20036  
(Counsel for RDSS Inc.)

Bruce L. Bucklin  
Acting Chief  
Technical Operations Section  
Drug Enforcement Administration  
U.S. Department of Justice  
Washington, D.C. 20537

Bruce D. Jacobs  
Fisher, Wayland, Cooper & Leader  
1255 23rd Street, N.W.  
Suite 800  
Washington, D.C. 20037  
(Counsel for AMSC)

Robert A. Mazor  
Albert Shuldiner  
Nixon, Hargrave, Devans & Doyle  
One Thomas Circle, NW, Suite 800  
Washington, DC 20005  
(Counsel for Constellation)

Dr. Robert L. Riemer  
Committee on Radio Frequencies  
HA-562  
National Research Council  
2101 Constitution Ave., N.W.  
Washington, D.C. 20418

Norman R. Leventhal  
Raul R. Rodriguez  
Stephen D. Baruch  
Leventhal, Senter & Lerman  
2000 K Street, N.W.  
Suite 600  
Washington, D.C. 20006-1809  
(Counsel for TRW, Inc.)

Terri B. Natoli  
Regulatory and Industry  
Relations Manager  
GTE Spacenet  
1700 Old Meadow Road  
McLean, VA 22102

Tedson J. Myers  
Reid & Priest  
701 Pennsylvania Avenue, N.W.  
Washington, D.C. 20004  
(Counsel for AfriSpace, Inc.)

Jill Abeshouse Stern  
Miller & Holbrooke  
1225 19th Street, N.W.  
Washington, D.C. 20036  
(Counsel for Ellipsat)

Leslie Taylor  
Leslie Taylor Associates  
6800 Carlynn Court  
Bethesda, MD 20817-4302  
(Counsel for Norris Satellite)

Cheryl Lynn Schneider, Esquire  
Communications Satellite Corp.  
950 L'Enfant Plaza, S.W.  
Washington, D.C. 20024

John L. Bartlett  
Wiley, Rein & Fielding  
1776 K Street, N.W.  
Washington, D.C. 20006  
(Counsel for ARINC)

Linda K. Smith, Esquire  
Robert Halperin, Esquire  
Crowell & Moring  
1001 Pennsylvania Ave., N.W.  
Washington, D.C. 20004-2505  
(Counsel for Loral Cellular)



Philip L. Malet